at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v1)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{28}$ $\sqrt{12}$ $\sqrt{45}$

$\sqrt{2 \cdot 2 \cdot 7}$ $\sqrt{2 \cdot 2 \cdot 3}$ $\sqrt{3 \cdot 3 \cdot 5}$

$2\sqrt{7}$ $2\sqrt{3}$ $3\sqrt{5}$

Question 2

Find all solutions to the equation below:

$$10\left((x+8)^2 - 7\right) = 90$$

First, divide both sides by 10.

$$(x+8)^2 - 7 = 9$$

Then, add 7 to both sides.

$$(x+8)^2 = 16$$

Undo the squaring. Remember the plus-minus symbol.

$$x + 8 = \pm 4$$

Subtract 8 from both sides.

$$x = -8 \pm 4$$

So the two solutions are $x = -4$ and $x = -12$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 - 6x = 40$$

Take the linear coefficient, -6, halve it and square the result. You should get 9. Add this to both sides of the equation to complete the square.

$$x^2 - 6x + 9 = 40 + 9$$

$$x^2 - 6x + 9 = 49$$

Factor the perfect-square trinomial.

$$(x-3)^2 = 49$$

$$x - 3 = \pm 7$$

$$x = 3 \pm 7$$

$$x = 10 \quad \text{or} \quad x = -4$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 2x^2 - 12x + 9$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 2 .

$$y = 2(x^2 - 6x) + 9$$

We want a perfect square. Halve -6 and square the result to get 9 . Add and subtract that value inside the parentheses.

$$y = 2(x^2 - 6x + 9 - 9) + 9$$

Factor the perfect-square trinomial.

$$y = 2((x-3)^2 - 9) + 9$$

Distribute the 2.

$$y = 2(x-3)^2 - 18 + 9$$

Combine the constants to get **vertex form**:

$$y = 2(x-3)^2 - 9$$

The vertex is at point $(3, -9)$.